CLASSIFICATION RESTRICTED

CENTRAL INTELLIGENCE AGENCY REPORT

INFORMATION REPORT

STAT

COUNTRY	USSR	DATE DISTR.	13 September 1948
SUBJECT	Scientific Research	NO. OF PAGES	3
PLACE ACQUIRED	USSR	NO. OF ENCLS. (LISTED BELOW)	
DATE OF INFORMATION	1945-47	SUPPLEMENT TO REPORT NO.	

STAT

THIS IS UNEVALUATED INFORMATION FOR THE RESEARCH USE OF TRAINED INTELLIGENCE ANALYSTS

SOURCE Documentary as indicated. (Information specifically requested.)

RECENTLY PUBLISHED RESEARCH OF THE GOR'KIY PHYSICOTECHNICAL SCIENTIFIC RESEARCH INSTITUTE

"Surface Tension of Metals," A. G. Samoylovich, Phys Chem Res Inst, Gorkiy

"Zhur Fiz Chem" Vol 21, 1947, pp 161-2

The electric field present in the surface layer acts on the ions of the metal and causes their compression. This produces the tendency of the exposed metal surface to contract. This compression is greater than the extension of the surface layer due to Maxwell's pressure and the pressure of the electron gas.

"Rotation Viscometer VIR-45," P. A. Ivanov, C. V. Arnovich, Gor'kiy Phys Tech Inst

"Zavod Lab" Vol 13, 1947, pp 237-8

The rotating cylinder immersed in the liquid is driven by an electric motor mounted in a Wheatstone bridge with potentiometer. The decrease of the electrical resistance of the motor, depending on the viscosity of the liquid, is compensated by adjustment of the potentiometer to zero deflection of the galvanometer, and the viscosity is read in terms of divisions of the potentiometer scale with the aid of a calibration curve. The apparatus permits determinations of viscosities from 0.01 to 40 poise.

"The Photocolorimeters FOKO, FOK-43M, and FOK-43S," P. A. Ivanov, F. E. Sukhareva, Gor'kiy Physicotech

CLASSIFICATION RESTRICTED

STATE	X	NAVY	X	NSRB		DISTRIBUTION											
ARMY	X	AIR	X	RDB	X												

RESTRICTED

STAT

Sci Res Inst

"Zavod Lab" Vol 12, 1946, pp 114-17

The three photocolorimeters described contain Se and S-Ag photoelements. The Se photoelements, whose maximum spectral sensitivity is within the region 400-600 mμ, are suitable for determinations of the concentrations of solutions of various colors. The S-Ag photoelements can be used for determinations of concentrations of blue solutions. The sensitivity of S-Ag photoelements is considerably greater than that of Se photoelements (3,000 and 500 microampere per lumen, respectively).

"Calculation of the Elastic Constants of Copper Single Crystals," I. Sal'nikov, Gor'kiy Physicotech Inst

"Zhur Eksper Teor Fiz" Vol 15, No 6, 1945

A new, relatively simple method is given for the theoretical calculation of the elastic constants $c_{11}-c_{12}$ and c_{44} of single crystals of Cu. The deformation involving tension along the x-axis with simultaneous compression along y, without change in volume, and the deformation of displacement are considered. The elastic constants are related to the density of potential energy W, by $c_{11}-c_{12} = \frac{1}{2}(d^2W/d\xi_{xx}^2)_{\xi=0}$ and $c_{44} = (d^2W/d\xi_{xy}^2)_{\xi=0}$, where ξ represents the components of the deformation tensor. The energy W is considered to be composed of the electrostatic energy of punctual ions and valence electrons and the energy determined by the overlapping on nondeformable electron envelopes; terms invariable at constant volume and van der Waals energy can be disregarded. The electrostatic part of the elastic energy is taken over from Bulashevich. The energy due to overlapping is composed of changes, occurring on superposition of electron envelopes of electrostatic, kinetic, and exchange energy which are calculated separately. The result gives $c_{11}-c_{12} = 4.9 \times 10^{11}$ dynes/sq cm and for $c_{44} = 8.6 \times 10^{11}$ dynes/sq cm. As compared with experimental data of Goens for low temperature, the calculated $c_{11}-c_{12}$ is in better agreement than that calculated by the method of Bulashevich and nearly as good as the theoretical figure of Fuchs; the calculated value obtained for c_{44} is in far better agreement with the experimental data than either the figure of Bulashevich or of Fuchs.

"Photometric Determination of Bismuth in Copper," A. I. Kokorin, I. G. Dermanova, Gor'kiy Physicotech Sci Res Inst

"Zavod Lab" Vol 12, 1946, pp 59-63

The proposed method of photometric determination of Bi and Cu is based on the reaction of Bi with NH_4CNS. Quantities of Bi ranging from 0.0005 to 0.003% can be

determined in Cu samples of 5 grams. After the separation of Cu, the time required for the analysis is not more than 30 minutes. The time required for complete analysis is 1.5-2.0 hours. Dissolve into arsenomolybdate by means of a solution of Na_2MoO_4 in 6.5N H_2SO_4 after removal of excess I_2 with $Na_2S_2O_3$, followed by reduction with $SnCl_2$ and measurement of the blue color in a Spekker absorptiometer with the Hg lamp and filters OY2 and OR2. The electrolytic cell eliminates errors caused by the use of Zn and acid to generate H_2. Good recoveries of both quinquevalent and trivalent as are obtained.

"Cuvettes for Photocolorimeters," E. I. Levina, Gor'kiy Physicotech Sci Res Inst

"Zavod Lab" Vol 12, 1946, pp 118

A drum-shape cuvette is made from a glass tube with a filling neck sealed onto the side, the ends being disks of colorless photographic glass sealed to the body by means of plexiglass.

- END -